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Comparative Costs of Transport:

The Northern Tier Countries of the Greater Horn of Africa

Executive Summary

Gordon J. Anyango
The Management Center
Nairobi, Kenya

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For more information about the series, contact:

Brian D'Silva
USAID/REDSO/GHAI
TEL: 703-235-5254; FAX: 703-235-3805
Internet: bdsilva@usaid.gov

Joe Carvalho
USAID/REDSO/ESA/ANR
TEL: 254-2-751613; FAX: 254-2-743204
Internet: jcarvalho@usaid.gov

Productive Sector Growth and Environment Division
Office of Sustainable Development
Bureau for Africa
U.S. Agency for International Development

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Executive Summary

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Foreword

Due to the limited size of their international markets, African countries need to combine their efforts, target, and subsequently transcend intraregional trade if they want to develop their economies sustainably. This necessity is recognized and accepted in theory by a number of leaders in northern tier countries of the Greater Horn of Africa subregion. So far, however, attempts at regional integration in practice — whether at the institutional or the market level — are moving at a slow pace, mainly because the sub region has, over the past few decades, experienced prolonged civil conflicts, droughts, famine, and food insecurity in the face of increasing population growth rates and deteriorating real per capita incomes.

The realization of intraregional trade and food security objectives has also been hindered because the regional transportation network is in need of urgent overhaul. Given the complementarity between the condition of the regional transport infrastructure (road, rail, sea/lake, and air) and the timeliness and cost of cargo delivery, it is critical to assess the relative costs, ease, and timeliness of transporting cargo (especially perishable agricultural exports) using conventional and nonconventional routes. It is also essential and timely to comprehensively examine the comparative costs of transportation in the subregion. This study which compliments a similar one earlier undertaken for the countries in the East African sub region is in response to that need.

The region is bestowed with eight major ports which are located in four countries namely: *Port Sudan* in **Sudan**; *Massawa* and *Assab* in **Eritrea**; *Port Djibouti* in **Djibouti**, *Berbera*, *Bossaso*, *Mogadishu* and *Kismayu* in **Somalia**. All the ports in the region are located on the Red Sea except for the two ports of Mogadishu and Kismayu in Somalia which are on the Indian Ocean. The Port of Mombasa which is currently serving Southern Sudan and has the potential to serve Ethiopia is also of importance to the economy of the sub region. All the ports however continue to experience myriad of operational problems.

The region is characterized by a common colonial heritage in that virtually all existing transport infrastructure, roads and railways, are connected to these ports, with little or no inter country and inter regional linkages, thus orienting all the countries to trade with overseas partners rather than with neighboring countries. This phenomenon has also encouraged the sourcing of emergency food and other supplies from outside the subregion, because of the convenience and the relative cost of doing so. Commercial air cargo air transport is also restricted in the sub region, although in emergency situations air transport has been used to deliver food stuffs, medicine, and other relief supplies, major destinations being war-torn Southern Sudan and Somalia. In addition to the inadequate investment in infrastructure, and the poor condition that characterizes it, low cost transportation solutions have been clearly threatened by cumbersome customs documentation and procedures; poor quality services; weaknesses in the policy environment; institutional and regulatory bureaucracies; poor management, and lack of competition.

The use of effective transportation cost approaches can facilitate regional trade. In addition, such approaches can expedite relief food distribution to food deficit countries and greatly assist in redressing the structural grain deficit problem that is so very much a key feature of region's food security picture.

This study extensively reviews the literature, and collects and analyzes data on various aspects of transportation costs in the region, between the main sea ports in the region - to selected destinations. By so doing, the study makes a significant contribution to earlier efforts to quantify, investigate, examine and minimize costs of transporting goods in the region. The study emphasizes that efforts should be made to achieve the low-cost transport solution in the region which is important partly because it promotes more efficient marketing systems, and facilitates regional and international trade, which in turn enhances food security. The achievement of food security is one of the sub region's key development challenges articulated by USAID and also represents a major strategic objective of various ongoing sustainable development initiatives. By emphasizing trade and underscoring the importance of lowering transport costs so as to promote food security, this study offers a new policy option that may guide USAID's work in addressing the challenges of assuring national and regional food security in the sub region. Promoting trade and sustainable development in Africa is also in the national economic interest of the United States, as such an investment enhances market development in Africa for American goods and services. Taken together, the benefits envisaged from this study will potentially contribute towards the achievement of USAID's goals of "broad-based economic growth achieved" and "lives saved, suffering reduced and development potential reinforced", as well as enhance the ability of field missions to achieve strategic objectives within their country strategies.

Mr Anyango's innovative treatment of the concept of comparative transportation cost analysis, as well as the underlying issues and problems facing the industry, is thorough and exhaustive. His extensive use of survey research data based on responses from numerous people interviewed in several countries across the sub region as part of the study's methodology is reflective of the market-based orientation of his investigation. His findings on constraints and weaknesses of the transport infrastructure and facilities, as well as transportation rates, demonstrate the gravity of the bottlenecks that face the industry and the urgency with which Government, at the national and/or regional levels, using donor and international financial assistance must address this problem. This report is therefore a major eye opener on the subject of transportation cost analysis in the Greater Horn of Africa and should form the basis for future policy formulation, and technical and financial assistance strategies on the subject.

This report is one in a series of studies on a joint activity of the USAID Africa Bureau's Food Security and Productivity Unit in the Office of Sustainable Development, Productive Sector Growth and Environment Division (AFR/SD/PSGE), and the Regional Economic Development Services Office for East and Southern Africa (REDSO/ESA). Funding for this study was provided by the USAID Greater Horn of Africa Initiative (GHAI).

David Atwood
Division Chief
Productive Sector Growth and Environment Division
Office of Sustainable Development
Bureau for Africa
U.S. Agency for International Development

Dennis McCarthy, Ph.D.
Chief
Office of Agriculture, Engineering, and Environment
USAID Regional Economic Development Services Office / East and Southern Africa (REDSO/ESA)

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Gordon J. Anyango
Director
The Management Centre Limited
Nairobi, Kenya

Glossary of Acronyms and Abbreviations

AAIN	Africa Action in Need
CARE	Cooperation of American Relief Everywhere
CDE	Chemin De Fer Djibouti – Ethiopia
CFAs	cleaning and forwarding agents
COMESA	Common Market for Eastern and Southern Africa
ECU	European Currency Unit
EPA	Eritrean Ports Authority
ERRA	Eritrean Relief Rehabilitation Agency
ERSTAS	Eritrean Shipping and Transit Agency
EU	European Union
GDP	gross domestic product
GOE	Government of Ethiopia
IGAD	Inter-Governmental Authority on Development
MPOC	Mogadishu Port Operations Company
MT	metric tons
MTSA	Maritime and Transit Services Enterprises (Ethiopia)
NGO	nongovernmental organization
PAID	Port Autonome International de Djibouti
POLs	petroleum, oils, and lubricants
RRC	Relief and Rehabilitation Commission of Ethiopia
RTC	River Transport Corporation
SPLA	Sudanese People's Liberation Army
SRC	Sudan Railways Corporation
TEU	twenty-foot equivalent unit
TGE	Transitional Government of Ethiopia
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
USAID	U.S. Agency for International Development
WFP	World Food Program
WTOE	WFP Transport Organization in Eritrea

The Northern Tier Countries of the Greater Horn of Africa

Executive Summary

INTRODUCTION

The purpose of this study is to present a comparative analysis of in- and intra-country transport costs in the Northern Tier countries of the Greater Horn of Africa subregion covering the *Sudan*, *Eritrea*, *Ethiopia*, *Djibouti*, and *Somalia*. The scope of the study covers identification of different transportation routes from the ports of *Port Sudan*, *Massawa*, *Assab*, *Djibouti*, *Berbera*, and *Mombasa*, for which the study provides an analysis of both the direct financial and economic transportation costs, including the indirect costs related to weaknesses and constraints in infrastructure, management issues, procedures, and regulations related to the sector. It also provides an analysis of the impacts of transportation costs on agricultural production, trade and food security, and how improvements of transport linkages would impact on the issues.

The subregion has experienced severe economic problems especially during the last decade, emanating from a host of factors: first, climatic problems have contributed to overall decline in food production, and second, unfavorable world market prices for agricultural produce have been persistent. Both have led to negative balances of payments and declining gross domestic products (GDP). In addition, civil strife which has been experienced (and continues to be in some countries such as Somalia and Sudan) in the region has exacerbated these problems: the Sudan is virtually divided into two entities controlled by the Islamic government in the North and the largely Christian and animist-based Sudanese People's Liberation Army (SPLA) and other factions in the South. Similarly, Somalia has no unitary government as various regions of the country are controlled by various clan warlords. In Eritrea, the liberation war which culminated in the country's independence in 1993 led to serious destruction of the previous excellent transport infrastructure and booming economy.

HISTORICAL REGIONAL TRANSPORT PERSPECTIVE

Historically, the transport industry in the region has evolved out of a colonial orientation which focused on the development of infrastructure towards creating corridors to provide links with overseas markets particularly Europe. Accordingly, the subregion is characterized by poor linkages between areas of agricultural surplus and high economic potential with areas of food deficit, although these transportation facilities have a vital bearing on food distribution and achievement of food security.

In *Sudan*, prior to the late 1960s, the railway between Port Sudan and Khartoum remained the principal transport infrastructure until the 187 km road from Khartoum to Wad Medani was constructed. Later, in the 1970s and 1980s, the current main roads in Sudan, largely concentrated in the North, were constructed.

In *Eritrea*, *Ethiopia*, and *Djibouti*, the transport history cannot be separated due to the overlap in the three countries' transport evolution. The oldest transport infrastructure in this subregion was the Northern Ethiopia (later renamed Eritrean) Railways, constructed by Italians from the Port of Massawa since 1887, reaching Asmara in December 1891, and the terminus at Agordet in 1928. However, the railway has been defunct since 1975, although efforts to reactivate it were initiated in 1994 and are ongoing. Africa's longest aerial rope-way (telegraphic system) extending for 71.8 km was also constructed between 1936 and 1939, connecting Massawa and Asmara. Later the

Franco-Ethiopian (later renamed Djibouti-Ethiopia-CDE) railway constructed between 1897 and 1917 was opened to traffic between Djibouti and Ethiopia, becoming the principal gateway to Ethiopia. The transport history of the three countries underwent further changes with the independence of Eritrea in 1993, which cut off Ethiopia's direct link to the sea ports making it a landlocked country dependent on the ports of Assab and Djibouti.

In *Somalia*, the major focus of transport has been the maritime sector, taking advantage of the country's extensive coastline. Similarly, with respect to inland transport, Somalia evolved major overland trade routes used by caravan traders, which connected the ports to inland destinations

EXISTING TRANSPORT INFRASTRUCTURE

Currently, all the Northern Tier of the Horn of Africa countries are characterized by inadequate investment and less than satisfactory condition of available transport infrastructure. In *Sudan*, the dominant transport infrastructures consist of the railway system, which is the largest in Africa covering some 4,800 kms; Port Sudan, which has 14 berths but lacks adequate cargo-handling equipment; and the road network, which covers some 16,000 kms. The existing transport infrastructure remain inadequate when compared to the size of the country, and in the recent past a decline in foreign finances coupled with management problems has adversely affected the country's transportation system.

In *Eritrea*, the two Ports of Massawa and Assab have 6 and 7 commercial berths, respectively. The infrastructure at the Port of Massawa was extensively damaged during the liberation war. Both ports suffer from lack of navigational aids and adequate cargo-handling equipments but are, however, set to benefit from a World Bank-sponsored Ports Development Project. Similarly, Eritrea has a total road network of around 6,000 kms built 60 years ago by the Italians, divided into four different categories. However, the over 30 years of war left the country's transport infrastructure in a severely dilapidated state due to lack of new investments and maintenance.

The main transport infrastructure in *Ethiopia*, which effectively became landlocked with Eritrea's independence in 1993, is the road network, which covers a total of 23,812 kms, and the Chemin De Fer Djibouti - Ethiopia (CDE) railway, which joins Addis Ababa and Djibouti (781 kms). The CDE's transport infrastructure and equipment including the trucks are in poor condition which has adversely affected its transport capacity and also resulted in numerous derailments/accidents. Ethiopia's existing transport infrastructure is insignificant in relation to the size of the population and the geographical area of the country, and was adversely affected by the protracted war with Eritrea, which diverted much of the needed funds for maintenance and expansion to the war fronts.

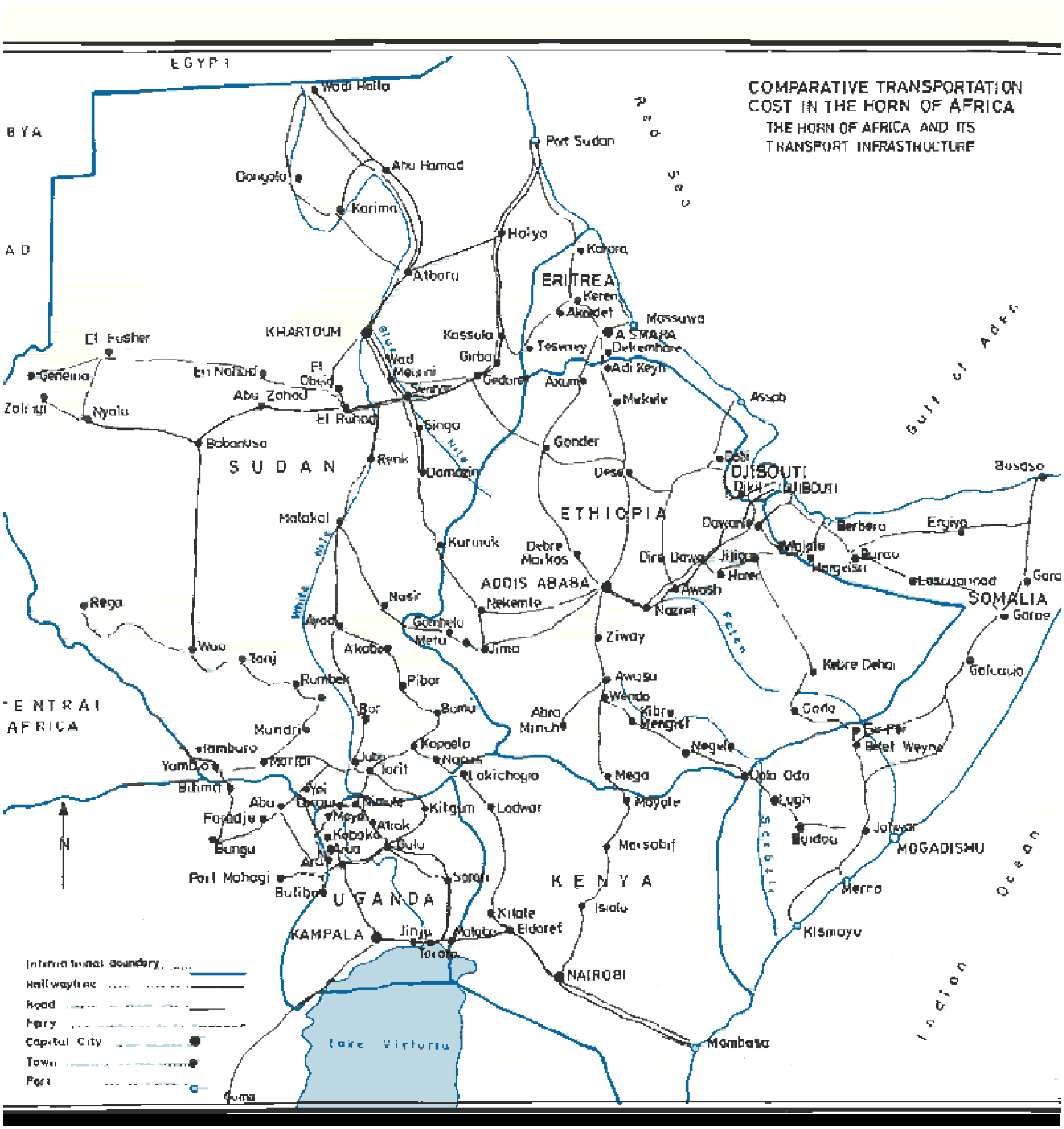
In *Djibouti*, the existing transport infrastructure is almost exclusively dominated by the activities at the Port of Djibouti, which has 16 berths and is geared towards international traffic, particularly to Ethiopia. The port has benefited from a modernization program of its infrastructure and equipment, which has placed it at a distinct advantage over other ports in the subregion. The country's road network covers a total of 2,905 kms.

The transport infrastructure in *Somalia*, which is endowed with an extensive coastline with several significant ports (including Mogadishu, Kismayu, Berbera and Bosasso among others), has been damaged and neglected, and lacks new investments since the outbreak of the civil war in 1991. Indeed, the country's road network which covered a total of 15,000 km has virtually collapsed, while most of the ports are not commercially operational.

CURRENT REGIONAL ROUTES

The study has identified 13 different route variations which are currently in use for import and export traffic within the region. The routes originate from the six major ports namely: *Port Sudan* in Sudan, *Massawa* and *Assab* in Eritrea,

Figure 1. The Horn of Africa and Its Transport Infrastructure



Port Djibouti in Djibouti, and *Berbera and Mogadishu* in Somalia. The port of *Mombasa* which is currently serving Southern Sudan, and has the potential to serve Ethiopia, is also of importance to the economy of the region (see map, Figure 1). The regional routes can be categorized into four corridors as follows:

Northern Sudan Corridor

The Northern Sudan routes are:

- **Rail Route from Port Sudan-Atbara - Khartoum-Wad-Medani-Sennar-Kosti - Babanusa-Nyala (2,096 km):** This railway route serving Northern Sudan connects Port Sudan via Atbara to Khartoum and further south to Nyala through Sennar, Kosti, and Babanusa. There are branch lines which provide the internal linkages and serve as feeders to the main line. Available information indicates that the branch lines to Wau and Nyala are in poor condition.

- **Road Route from Port Sudan-Kassala - Medani-Khartoum (1,191 km):** This is the principal road route serving Northern Sudan. From Port Sudan, it runs via Kassala (540 km), before reaching Khartoum and covering an additional 651 km. This road is paved and in good condition. From Khartoum, various internal linkages to the other parts of the country exist.

Eritrea

The major route serving Eritrea is the **road highway linking Massawa port and Asmara (115 km),** which is paved and in fair condition, rehabilitation and improvements having been completed by 1995. The road splits into three major routes within Eritrea, namely:

- **Asmara-Dekemhare-Adi Keyih-Fadi (113 kms)**, which continues to Senafe, Adigrat, Mekele, Dessie to Addis Ababa;

- **Asmara-Mendefera-Mereb-Adi Quala-Adwa to Gonder** in Northeast Ethiopia; and

- **Asmara via Keren (91 kms) and Argodet (a further 82 kms), and Barentu to the border town of Tessenei (356 kms).** From the border with Sudan, the road continues via Kassala and Gedaref to Khartoum.

Ethiopia

Ethiopia's main import-export routes originate from the ports of Assab and Massawa in Eritrea and the port of Djibouti. The port of Assab is currently Ethiopia's principal port, which is linked to Addis Ababa through **the 882 kms Assab-Addis Ababa bituminous paved road**, passing through Eastern Ethiopia via Dobi, Mile, Awash, and Nazret. From Addis Ababa, internal linkages exist via several corridors to the West, Southwest, Northwest, and Southern destinations in the country.

Djibouti / Ethiopia

Similarly, there are three major routes between Djibouti and Ethiopia, namely:

- **Chemin De Fer Djibouti - Ethiopia Railway (formerly Franco-Ethiopia) (781 kms)**, which transits through Djibouti via Dire Dawa, Awash and Nazret before reaching Addis Ababa. However, the CDE has been characterized by various operational and management problems that have negatively impacted on its transport capacity over the years.

- **Road Route via Dewenle (840 kms)**, which traverses Djibouti through Dewenle and runs almost parallel to the railway to Dire Dawa, where it joins the Assab-Addis Ababa corridor. This road is paved from Djibouti up to the border with Ethiopia, except for a 10 km stretch between Ali Shebi and Gelile. Within Ethiopia, the road is an all-weather gravel facility, with the exception of the 56 km paved section between Kulubi and Dire Dawa.

- **Road Route via Dobi (910 km)**, which runs from the port of Djibouti through the border town of Galafi and joins the bituminous Assab-Addis Ababa road at Dobi, thereafter sharing the same facilities.

Somalia

Somalia is served by five major road routes. These include:

- **Berbera-Hargeisa (147 kms)**, which is paved though all the bridges between Berbera and Hargeisa were blown up during the civil war; it then continues through the border town of Wajale and further into Ethiopia via Jijiga, Harer, Dire Dawa; from where it joins the Djibouti-Dewenle road route to Addis Ababa covering a distance of 854 kms.

- **Mogadishu-Johwar-Belet Weyne-Fer Fer**, which is a potential regional route but basically serves central Somalia. The road is paved up to Bulo Burti (216 kms) but in poor condition. From the Somalia/Ethiopia border town of Fer Fer, the road passes through Kebri Dehar and Dege Bur to Jijiga where it joins the one described above from Berbera.

- **Mogadishu-Baidoa-Lugh-Dolo Odo**, which is paved and in good condition up to Baidoa (256 kms), before reaching Dolo Odo at the border with Ethiopia. The road has the potential to connect to Addis Ababa via Negele, Kibre Mengist, Awassa, Ziway and Modjo.

Southern Sudan

Currently Southern Sudan cannot be reached from Port Sudan or Khartoum. The region can only be reached using routes from the port of Mombasa to four primary destinations, one in Northwestern Kenya, **Lokichokio**, and three in Northern Uganda — **Gulu, Kitgum,** and **Koboko**. However, it should be noted that, as of November 1996, none of the road routes to Southern Sudan was operational, and the region could only be reached through air connections via Lokichokio. Notwithstanding, the existing routes include:

- **Mombasa-Nairobi-Eldoret-Lokichokio**, which connects to Juba in Southern Sudan, via Narus, Kapotea, and Torit (1,897 kms): Lokichokio serves as a road-to-air transhipment point because of the difficulties of entering the Eastern Equatorial area by road.

- **Mombasa-Nairobi-Tororo-Kitgum-Mad i Opei-Lopodi-Torit-Juba**, which shares the same facilities with the one described above to Eldoret, after which it runs to Malaba at the border (953 km) and then passes through Tororo, to Kitgum and further to Madi Opei, Lopodi, Torit, and finally to Juba (1,780 kms).

- **Mombasa-Nairobi-Eldoret-Malaba-Tororo-Gulu**, which also shares the same facilities with the above from Mombasa to Lira. After the Lira junction, the route proceeds to Gulu (primary destination), and then continues via Atiak and Nimule to Juba (1,659 kms).

- **Mombasa-Nairobi-Eldoret-Malaba - Kampala-Masindi-Paraa-Pakwach-Koboko-Oraba-Kaya-Yei-Juba (1,909 km) or Yei-Tambura (2,264 km)**, which from Mombasa shares the same facilities with the above routes up to Malaba (953 Km) then runs to Kampala and continues via Masindi, Paraa, and Pakwach to Koboko. From Koboko, the route runs via Oraba border post and then crosses into Sudan at Kaya to Yei, where two distinct routes emerge namely:
  - (a) the route through Gobul and Dikala, to Juba, an additional 110 Km from Yei.
  - (b) the route through Maridi and Yambio to Tambura, an additional 465 km from Yei.

There are constant changes to the above main routes to suit the prevailing security conditions. Thus, before the recent closure of the last overland route, the major route went through Congo (formerly Zaire) covering a total of 2,575 km. This road route shares the same facilities with the original route above to Koboko (1,774 km), from where it runs south to Arua and continues further crossing the border into Congo at Vurra. It then runs to the northern Congo border with Sudan at

Aba, and then connects to Lasu. After Lasu the route passes through Maridi, Yambio and then proceeds to Tambura.

THE EXISTING TRANSPORT INDUSTRY

Ports

Port Sudan in the Sudan

Port Sudan is managed by the Sea Ports Corporation (SPC), which was established in 1974 to administer Sudanese ports. The port is understood to have handled a total of 859 ships in 1995. Despite having a theoretical capacity of 8 million MT a year, available statistics indicate that the port has experienced a decline in its throughput by nearly 1 million MT from a high of 4.3 million MT in 1990/91 to 3.3 million MT in 1994/95. The declining throughput at the port is understood to reflect inadequate cargo-handling equipment, low availability of existing ones, and lack of spare parts — all of which result in the prevalence of inefficient, labor-intensive cargo-handling operations. The above factors, coupled with the small size of the harbor, has operationally led to shipping delays and congestion at the port. In addition, Sudan is served by an alternative port, *Suakin*, reopened in 1991 with a capacity to handle 1.5 million MT annually.

Port of Massawa in Eritrea

The port of Massawa suffered substantial damages during the liberation war, which has severely limited its capacity to handle containerized traffic. The port is managed by the Eritrean Ports Authority (EPA), a state-owned corporation. The port handled a total of 415 ships in 1995. However, the port lacks adequate navigational facilities, which limits berthing to daylight hours. Available data indicate that the port has handled an inconsistent but generally increasing traffic from 431,748 MT for the last six months of 1991 to 702,808 MT in 1995, containerized cargo constituting only 6.8 percent in this latter year. The port also lacks adequate cargo-handling equipment and storage facilities. However, the Government of Eritrea, with the assistance of several donors, has embarked on a reconstruction and rehabilitation program to restore the infrastructure at the port.

Port of Assab

Like Massawa port, the port of Assab, Ethiopia's principal gateway, is managed by EPA. The port handled a total of 600 ships in 1995. However, the port lacks adequate navigational facilities, which restricts berthing to daylight hours only. The port lacks adequate cargo-handling equipment, which reflects that the port is congested and operating at capacity. Despite that, the total cargo throughput at the port increased sharply over the last five years from 702,590 MT for the last six months of 1991, to a peak of 2.79 million MT in 1995. Containerized traffic constituted only 7.3 percent of the throughput in 1995, some 205,038 MT or 15,413 TEUs (twenty-foot equivalent units). Imports through the port rose from 636,171.3 MT in 1991 to 2,442,589 MT in 1995, out of which 99 percent (2,422,909 MT) was transit traffic to Ethiopia. However, just like Massawa port, the port of Assab, is set to benefit from a Ports Development Project that involves supply of port equipment and construction of new berths.

Port of Djibouti

Djibouti port is owned and managed by the state through the Port Authority, the Port Autonome International de Djibouti (PAID). The port handled a total of 892 ships in 1995. Available information indicates that the port has a theoretical capacity of 6 to 8 million MT. However, the total traffic passing through the port of Djibouti has represented an average annual growth of only 4.4 percent since 1985, recording some 1.23 million MT in 1995. Domestic traffic in 1995 stood at 262,397 MT, comprised almost exclusively of imports (260,000 MT, or 99.1 percent, compared to 86 percent and 95 percent in 1990 and 1985, respectively). Similarly, transit traffic (mainly to Somalia and Ethiopia) amounted to 158,067 MT in

1995, compared to 225,850 MT in 1985, a decline of 30 percent. Container traffic, which up to 1989 averaged less than 25,000 TEUs per year, recorded significant increases to 83,903 TEUs in 1995, and is projected to exceed 100,000 TEUs in 1996. The port has benefited from a lot of investments from the government to upgrade infrastructure and improve efficiency in a bid to recapture Ethiopian traffic as the port is currently underutilized.

Ports of Mogadishu and Kismayu

Prior to the civil war, Mogadishu and Kismayu were very busy ports, with Mogadishu port's administration being the responsibility of the Mogadishu Port Operations Company (MPOC). However, since 1991, they have been at the center of a bitter struggle over their control by different clan warlords. The civil war has adversely affected the port business, and in 1996 both ports were not commercially operational.

Berbera Port in Somalia

Berbera port in Somalia is administered by the government of the self-declared independent Northwest Region based in Hargeisa. The port has received some 80 ships per month on the average, over 50 percent of which were livestock carriers. However, the port has lacked modern cargo-handling equipment, navigational aids, storage facilities, and adequately trained personnel since 1994. In 1994, exports of sheep and goats were around 2.2 million, increasing to 2.8 million in 1995. Similarly, some 131,000 heads of cattle and camels were exported in 1994, compared to 197,000 heads in 1995. The port handles an average of 150,000 MT of cargo as imports annually.

Bosasso Port

The port of Bosasso, which is under the administration of the Bari Regional Authority, largely serves Northeastern Somalia. The port lacks adequate physical infrastructure, cargo-handling equipment, and navigational facilities. In 1995, some 10 million goats and sheep were exported through the port to Saudi Arabia. Import commodities include largely food stuff comprising wheat, powdered milk, etc.

The Railway Systems

The railway system in *Sudan* is operated by the Sudan Railways Corporation (SRC), a parastatal, which operates 93 locomotives and 3,464 wagons. Average locomotive age is about 20 years, with most wagons being over 50 years. SRC hauled a total of 1.76 million MT in 1994/95, compared to 1.75 million MT in 1993/94. Of the total tonnage hauled, export traffic constituted 30 percent in 1994 and 12.5 percent in 1995. In contrast, import traffic and purely domestic (local) traffic increased from 37.8 percent to 54.5 percent and from 31.5 percent to 32.5 percent, respectively, during the same period. Thus, SRC's principal business is the import traffic.

The railway system in *Ethiopia* and *Djibouti* is jointly owned by the CDE, which currently operates 13 locomotives and 590 wagons, all of which are fairly old. As of June 1996, CDE's locomotive availability was less than 50 percent, which while nevertheless low is quite similar to those of other African railways in the region — for example, Kenya Railways and Tanzania Railways. During its peak, CDE moved about 90 percent of Ethiopia's international traffic. However, this has declined to about 15 percent since the Ogaden war in 1977/78. Overall, CDE's freight tonnage declined from a high of 335,378 MT in 1986/87 to a low of 210,573 MT in 1993/94, equivalent to 37 percent. CDE's limited capacity to handle Ethiopia's international traffic is illustrated by the fact that as of June 1996, for example, there was a backlog of some 20,000 MT, equivalent to about 80 trainloads at the port of Djibouti. However, since 1995, efforts to improve the capacity of the CDE have been underway, with the help of several donors. In this context, the European Union has funded three studies as a prelude to a funding requirement of some ECU (European Current Units) 102 million.

Road Freight Transport Industry

Sudan's heavy haulage road freight industry in 1996 comprised seven major private transport companies in the large trucks category, which collectively controlled a significant proportion of the industry. There are also smaller firms which worked mainly as subcontractors. The deteriorating performance of the Sudanese economy has severely affected the transport sector, as reflected in the decline of combined fleet size of the seven major transport firms from 1,108 trucks in 1994 to 712 trucks by June 1996.

In *Ethiopia*, the road freight transport industry has experienced tremendous transformation since the early 1980s. For a large part of the 1980s, commercial road transport was closely regulated and controlled by the Government of Ethipia (GoE), through a parastatal FTC which nevertheless owned only about 20 percent of the industry fleet. The FTC allocated loads to its fleet and those of the private sector termed associates, and regulated prices for all freight movement. The non-commercial freight transport sector, mainly comprising the movement of relief supplies donated by international nongovernmental organizations (NGOs) and donors, was coordinated by its dominant receiver, the Relief and Rehabilitation Commission of Ethiopia (RRC). The policy changes enunciated by the Transitional Government of Ethiopia (TGE) in 1991 drastically changed the road transport sector, focusing on private sector operators to compete with state-owned enterprises. In addition, tariffs were deregulated and restrictions on cargo allocations abolished. By June 1996, Ethiopia had some 17,476 freight vehicles, out of which only 25 percent were of capacity exceeding 12 MT. The average age of the vehicles is 10 to 12 years, which reflects on low availability. Similarly, the imbalance between import and export cargoes result in low utilization, about 55 percent of available capacity particularly for the private commercial fleet.

In *Eritrea*, the road freight industry followed quite a similar pattern to that of Ethiopia up to 1992, when it was largely privatized. Prior to this, there were numerous restrictions on freight transport in terms of types of goods carried, routes followed, and destinations, among others. Indeed, up to 1992, the Eritrean road freight industry was almost exclusively in the hands of NGOs, notably the *WFP Transport Operation in Eritrea (WTOE)*. The Eritrean Relief Rehabilitation Agency (ERRA), originally established in exile in Sudan, since 1975 is the oldest trucking organization in Eritrea, and by January 1995 had a total of 160 trucks comprising mostly the former WTOE fleet. The total trucking fleet is estimated at 2,500 vehicles of various types and sizes, mostly owned by private associations and companies, some owning upto 1,000 vehicles. The trucking industry in Eritrea is, however, faced with several problems, including poor availability of spare parts, tires, and back-up service dealers, mostly due to shortage of foreign exchange and a resulting low availability of capacity; and lack of adequate commercial cargo, most freight currently being food aid (which results in poor utilization).

In *Djibouti*, the long-haul road transport freight capacity operates on a very limited scale and is primarily geared to serve the domestic market. It consists of around 50 to 70 units owned by three private companies. Road transport along the Djibouti-Addis Ababa corridor was until September 1996 very bureaucratic and cumbersome to transporters due to administrative regulations imposed by both the governments of Djibouti and Ethiopia, which had severely constrained commercial transportation and also substantially raised the transport costs along the corridor. The Joint Ministerial Agreement signed in September 1996 is, however, understood to have provided a basis for lifting these controls/ restrictions. Expectations are that a large number of transport operators will now be attracted to the route providing a basis for competition, thus effectively lowering transportation costs.

In *Somalia*, road freight is the only existing inland transportation system. In Southern Somalia, privately owned companies and NGOs are the main operators, while in Northern Somalia (Somaliland), the trucking industry is exclusively private sector-based and comprised of medium-sized trucks of 20 to 25 MT, though a few large trucks (25 to 30 MT) are available. Although there is adequate transport capacity to move cargo, the fleet is old, averaging 20 years, and the industry is characterized by low fleet replacement, especially since 1991.

Road Freight Industry Serving Southern Sudan

As a result of the ongoing civil war in Southern Sudan which has disrupted economic activities, there is lack of commercial cargo and, consequently, local road freight capacity. The principal cargo are relief supplies mostly, imports from overseas and others sourced from Kenya and Uganda. In practice, the capacity serving the region is comprised of foreign truckers based in Kenya and Uganda and international NGOs such as Africa Action in Need (AAIN) and Cooperation of American Relief Everywhere (CARE) that undertake trucking services inside Sudan but are based outside the country. However, this is limited to supporting their programs. Only one private freight transport firm, Terra Firma, is based in Southern Sudan. The significant features of the road freight industry serving Southern Sudan include the need for specialized and hardy 4x4-wheel-drive vehicles. In addition, the industry is highly seasonal and follows a “Transport Window” which corresponds to the dry season. During wet seasons, movement is extremely difficult due to the poor condition of roads exacerbated by the prevalent black cotton soils and the low log bridges. The road freight industry in Southern Sudan also depends on expensive fuel airlifts delivered mostly from Lokichokio in Northwest Kenya for the internal operations.

Role of Traditional Transport in the Region

Traditional modes of transport have held a significant position in the transport industry of the subregion due to poor and inadequate infrastructure, particularly motorable access roads, thereby providing a vital complementary role to other transport modes in the subregion. In Ethiopia, Sudan, Eritrea, Djibouti, and Somalia, draft animals play a vital and complementary role to modern transport, especially in providing access to remote areas, and has particularly been instrumental in the distribution of relief food and other materials. A significant level of cross-border trade within the region is also carried out using traditional transport. In practice, the operation involves the use of pack animals carrying cargo singly or animal-drawn carts pulled by several animals collectively.

Other Transport Facilities

Other transport facilities available in the subregion include:

- **River Transportation (Sudan):** Water (river) transport along the Nile is an important industry in the Sudan, providing an important link between the northern and southern parts of the country. Specifically, the 1,755 km section between Khartoum-Kosti-Malakal and Juba is the most significant route commonly used, particularly by WFP for the delivery of relief supplies including food aid to the south. The River Transport Corporation (RTC), a parastatal organization has been the main operator. In addition, there are also several private operators. However, like other sectors of the transport industry in the country, its full potential development has been adversely affected by the civil war in Southern Sudan.

- **Regional Airfreight Industry:** There are no scheduled cargo flights among the countries in the region. However, frequent air connections — largely passenger services with limited freight capacity — exists between some of the principal cities in the region. Air freight cargo operations, exist, however between the subregion and Middle East and European markets, among others. Due to insecurity and poor state of the roads, air transport plays a crucial role in the delivery of relief supplies to Southern Sudan, particularly from Lokichokio in Northwest Kenya, which serves as the principal connection/gateway to the various destinations in Southern Sudan.

- **Oil Pipeline**: Sudan is the only country in the subregion with an oil pipeline, which delivers petroleum products from Port Sudan to Khartoum. However, significant volume of petroleum, oils, and lubricants (POLs) is still transported by road.

PROCEDURES FOR CARGO MOVEMENT

Clearing and forwarding agents (CFAs) are the major players in the administration of procedures and arrangements for cargo movement on behalf of cargo owners. These agents work together with (and sometimes perform the functions of) shipping agents, stevedoring companies, customs authorities, port and police authorities, and transport operators.

Shipping, Clearing, and Forwarding Services

In *Sudan*, the shipping, clearing, and forwarding industry is served by both government agents and private companies. As of June 1996, there were more than 70 private clearing and forwarding agencies. In *Eritrea*, the Eritrean Shipping and Transit Agency (ERSTAS) a state-owned parastatal, has the monopoly to provide ship's agents business, in both the ports of Massawa and Assab. Cargo-handling services, which include stevedoring and shorehandling services, are provided by the Eritrean Port Authority itself. Domestic clearing and forwarding agency business has, however, been liberalized, and there are currently some 28 agents operating in Eritrea.

In *Ethiopia*, the Ethiopian Maritime and Transit Services Enterprises (MTSE) a parastatal, has an agreement with ERSTAS of Eritrea to be the sole representative in Ethiopia, thereby securing for it all shipping and transit agency business through the ports of Massawa and Assab. However, in Ethiopia as in Eritrea, the clearing agency business has been liberalized, but activities are limited in that agencies cannot undertake the transit agency business; their operations are instead limited to inland Ethiopia. It is estimated that MTSE currently controls some 80 percent of the clearing and forwarding business for Ethiopian goods, particularly on the Assab - Addis Ababa Corridor.

In *Djibouti*, the shipping agency, cargo-handling services agency (including stevedoring), and clearing and forwarding agency businesses are for the most part provided by the private sector. However, the Ethiopian MTSE is also represented. The Port of Djibouti Authority exclusively provides cargo-handling services, including stevedoring, in respect of containerized cargo. In *Northern Somalia* at the port of Berbera, there are no formally established clearing and forwarding agents. In practice, the clearing and forwarding of cargo is largely undertaken by the consignees themselves. In the case of large cargo consignments, the existing shipping agents who are private sector operators may provide clearing and forwarding services for the importer.

Customs Services

Within the entire region, only Ethiopian cargo is transited through another country (Eritrea and Djibouti), as all the other countries are served by their domestic ports. Each country operates its respective customs procedures, which have been noted to be cumbersome. The customs requirements for Ethiopian cargo at the ports of Assab and Massawa are even more cumbersome, due to the fact that clearance must begin with customs authorities in Addis Ababa. This includes the making of a cash deposit equivalent to 125 percent of the assessed duties. In addition, all goods (except relief and investment cargo) arriving by road from Assab, and by road and rail from Djibouti, must be received at Lagar Customs Depot in Addis Ababa for finalization of procedures, which may involve off-loading from road vehicles.

MAJOR COST COMPONENTS OF CARGO MOVEMENT

The major cost components identified as

comprising the overall costs of transportation include:

- **Port Charges**: related to cargo-handling services, and denominated in weight and volume, except for Port Sudan, where the charges are related to value, and at Berbera, where the charges are related to the type of packaging. These charges comprise inter alia shorehandling, port, and storage charges.

- **Clearing and Forwarding Costs**: levied by CFAs with respect to services rendered in the administration of procedures and requirements for cargo clearance. Clearing and forwarding charges are levied as a percentage of the CIF value of cargo, but some are levied on the basis of weight, volume. or unit of packaging.

- **Inland Freight Costs:** costs related to the movement of cargo from the ports to the consignees premises. These costs vary by mode (road/rail), route, and type of cargo (general, containers, POLs). Freight costs are quoted per metric ton, per metric ton / kilometer, or per TEU.

- **Costs Due to Inefficiencies and Transit Delays**: costs incurred by importers due to excessive transit times beyond the budgeted transit times.

Comparative Costs of Transportation

The analysis provided in this study assumes a 15 MT consignment (general cargo or 1 TEU container of the same weight) with a CIF value of US$ 5,000.

Port Charges

While a direct comparison of port charges in the region is not possible because of the different methods of charging, a comparative analysis of hypothetical similar scenarios for domestic and transit traffic indicates as follows:

- *For Domestic Traffic*
  - The estimated port charges at Mombasa and Berbera are the most expensive for domestic general cargo, at about US$ 22 per metric ton. Similar charges at Djibouti are US$ 17 per metric ton, compared to Assab and Massawa, where the charges range between US$ 9 and $17 per metric ton. The port of Berbera also has the lowest charges at US$ 3.42 per metric ton.
  - The estimated domestic port charges for containerized cargo at Djibouti are the highest in the region at US$ 35 per metric ton, compared to US$ 25 per metric ton at Mombasa and US$ 13 per metric ton at Assab and Massawa. The high containerized cargo charges at Djibouti reflect the captive nature of the cargo to the port, which has better facilities compared to other ports.
  - In all the ports, the minimum charges for domestic containerized cargo are higher than charges for domestic general cargo.

- *For Transit Traffic*
  - The port of Berbera has both the lowest and highest charges for general cargo, ranging between US$ 3.42 and $22 per metric ton, depending on the type of packaging, with equivalent charges at Assab and Massawa ranging between US$ 8 and $14 per metric ton. Similar charges at Djibouti are US$ 8 per metric ton, compared to US$ 11 per metric ton at Mombasa.
  - The port of Djibouti would be considered the most expensive with respect to transit of containerized traffic, with charges being US$ 14 per metric ton, compared to US$ 13 per metric ton at Mombasa and US$ 11 per metric ton at Assab and Massawa.
  - In virtually all the ports except Berbera, transit of general cargo attracts lower rates compared to transit of containerized cargo.

- *Other Port Charges*
  - Cargo passing through the ports of Assab and Massawa attract additional charges,

which amount to as much as US$5 per metric ton. These include: *City Administration* charges (only applicable at Massawa), which are assessed at 1 percent of the CIF value; *Preliminary Survey* fees, EBirr.150 per Bill of Lading and which translates to some US$1.60 per metric ton; and a *Rehabilitation Fee* at Massawa, being Birr 11.50 per metric ton (US$1.6).

Clearing and Forwarding Costs

Most of the charges are quoted on the basis of CIF value, but some are levied on the basis of weight and/or volume, or unit of packaging. Estimated CFA charges are highest and almost at the same level at Djibouti and Mombasa (over US$17 per metric ton) compared to US$7.7 per metric ton for the Eritrean ports of Massawa and Assab.

Inland Freight Costs

- **By Route**: For purposes of assessing the existing direct inland freight costs from the various ports in the region, we have selected some 13 different routes which are currently in use, although in varying intensities. Table 1 shows the comparisons.

- **By Mode:** In the *Sudan*, freight costs related to road transport are significantly higher than rail charges, rail charges being a flat rate of US$0.011 per metric ton per kilometer, compared to road charges which vary between US$0.03 to $0.12 per metric ton per kilometer. In *Djibouti* and *Ethiopia*, rail charges are equivalent to the minimum road freight costs at US$0.05 per metric ton per kilometer, which reflects the monopolistic advantage that CDE enjoyed on the corridor until September 1996, when restrictions on commercial road transportation were lifted. The higher road charges are attributed to the poor condition of roads, high operational costs including spares and maintenance, and absence of backhaul cargo in many cases.

- **General Cargo versus Containers:** Since freight costs in the subregion are quoted on either a metric ton and/or metric ton per kilometer basis, there are no cost variations with respect to the type of cargo. The applicable rates are, therefore, uniform for both general cargo and containers.

Table 1. Direct Inland Freight Routes

Route	Distance	Imports	
		Rate/MT (US$)	Rates/MT/km (US$)
Routes in Northern Sudan			
Rail Route			
Port Sudan-Khartoum	787	8.65	0.011
Port Sudan-Wau[1]	2,216	24.40	0.011
Road Route			
Port Sudan-Khartoum	1,191	35.70	0.029
Port Sudan-Wau	2,292	352.97	0.154
Routes through Eritrea			
Massawa-Addis Ababa	1,137	70.99	0.0624
Massawa-Gonder	646	42.50	0.066
Routes to Addis Ababa			
Rail Route			
Djibouti-Addis Ababa (rail)	781	38.27	0.049
Road Routes			
Assab-Addis Ababa	882	44.90	0.051
Djibouti-Addis Ababa (Galafi)	910	45.50	0.050
Djibouti-Addis Ababa (Dewenle)	840	58.00	0.069
Potential Routes to Addis Ababa			
Berbera-Addis Ababa	1,001	132.54	0.132
Mombasa-Addis Ababa (Mayale)	1,992	210.00[2]	0.105
Routes to Southern Sudan			
Mombasa-Lokochokio-Thiet (Wau) (road/air)	2,235	995.00 (1,330)[3]	0.445
Mombasa-Lokochokio-Tambura (road/air)	2,295	801.00 (1,503)	0.349
Mombasa-Koboko-Thiet (road)	2,757	826.70	0.360
Mombasa-Koboko-Tambura (road)	2,684	833.00	0.310

1. Route currently inoperational.
2. Rate for Nairobi-Addis Ababa.
3. Freight costs via Lokichokio assume road transport to Lokichokio and the use of C-130 Hercules transport plane to Southern Sudan. Figures in parentheses represent the use of a smaller Buffalo aircraft. It is interesting to note that there is no significant difference in direct between using the road from Koboko and airlifts from Lokichokio using the bigger Hercules plane as the distance from Uganda to Southern Sudan increases, so does air transport costs increase to a point where airlifts are competitive with road transport.

- **Costs due to Inefficiency and Delays in Transit:** If it is assumed that for each consignment, an importer has a budgeted transit time of 15 days, then only four routes can achieve this: the Massawa-Gonder, Djibouti-Addis Ababa via Galafi; and Djibouti-Addis Ababa via Dewenle and Berbera-Addis Ababa. All the other routes exhibit excess transit time, which can be related to excess funding, assuming costs of working capital at 20 percent and inflation at 20 percent. The costs for the road routes connecting Port of Mombasa to Southern Sudan via Lokichokio are between US$300 to $384 (2.3 to 3 percent of direct costs), compared to around US$997 (7.2 percent) via Koboko. The lowest costs are US$7 (1 percent) for the road routes from Djibouti. The transit inefficiency of the rail routes is clear, and although the actual level of the additional costs are not as high as for the roads, they represent a significant proportion of the overall direct costs of transport from Djibouti to Addis Ababa, US$ 262 (45 percent) and Port Sudan to Khartoum US$ 146 (112 percent).

Total Costs of Transportation

The summation of the above cost components — that is, port charges, clearing and forwarding charges, direct inland freight charges, and the cost due to inefficiencies and delays in transit — are presented in Table 2. The table shows that:

- The least expensive route to Khartoum is the rail route from Port Sudan, with overall costs amounting to only 9.5 percent of CIF value, compared to the Massawa-Khartoum potential road route which would, if used in its current condition, represent a cost proportion of 40 percent of CIF or 47 percent if no back-haul cargo is available.

- The least expensive route to Gonder is via Massawa and Asmara, with costs equivalent to 19.96 percent of CIF costs, or 24.4 percent if no back-haul cargo is available. The most expensive would be the route from Assab via Addis Ababa, with costs equivalent to 33.8 percent.

- Similarly, the least expensive route to Addis Ababa is the Djibouti- Addis Ababa road route via Galafi, at 18.96 percent of CIF, compared to the Djibouti rail route at 21.9 percent. Other routes to Addis Ababa are as follows:
  - — Massawa-Addis Ababa, 28.92 percent (36.4 percent)[1]
  - — Assab-Addis Ababa, 21.54 percent
  - — Djibouti-Addis Ababa (via Dewenle), 22.7 percent
  - — Mombasa-Addis Ababa (via Moyale), 87 percent

- The road routes to Southern Sudan via Kenya and Uganda (Koboko) exhibit costs of about 300 percent of CIF value, compared to the road/air route combinations at between 286 and 345 percent. This confirms the competitiveness of road/air transport combination to Southern Sudan as the distance from Uganda increases and as unofficial road transit charges escalate. However, the least expensive route to Southern Sudan would be the Port Sudan-Khartoum to Wau (or Thiet), which would be about 102 percent of the CIF value, but this route is currently not operational.

  Other observations are that:

- The two road routes from Djibouti to Addis Ababa both have great potential for the Addis Ababa traffic in the short term, if the recent transportation agreements between Ethiopia and Djibouti are fully implemented.

- Although it is clear that Ethiopia would want access to the port of Mombasa, this route does not offer any comparative advantage to the current routes. Similarly, the road route from Berbera via Jijiga and Dire Dawa to Addis

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[1] The figure in parentheses represents the charges applicable if no back-haul cargo is available.

Ababa does not offer any comparative advantage to the current routes via Assab and Djibouti. The port of Berbera and the corridor would, however, offer potential as a security route for traffic to and from the Harerge province of Ethiopia.

Table 2. Summation of Transportation Costs (US$)

	Distance	Port Charges	CFA Charges	Inland Freight	Additional Costs	Total Costs	Cost / MT	Cost / MT / KM	Total Transport Cost (% of CIF)
Routes in Northern Sudan									
Rail Routes									
Port Sudan-Khartoum	787	100	100	130	146	476	32	0.041	9.5
Port Sudan-Wau	2,216	—	—	—	—	—	—	—	
Road Routes									
Port Sudan-Khartoum	1,191	100	100	535	138	873	58	0.049	17.5
Port Sudan-Wau	2.992	100	100	4,605	312	5,117	341	0.114	102
Massawa-Khartoum[1]	1,161	170	115	1,437 (1,940)	127 (131)	1,849 (2,356)	123 (157)	0.106 (0.135)	37.0 (47.1)
Routes through Eritrea									
Massawa-Addis Ababa	1,137	170	115	1,065 (1,438)	96[2] (97)	1,446 (1,820)	96 (121)	0.085 (0.106)	28.9 (36.4)
Massawa-Gonder	646	170	115	638 (861)	75[3] (75)	998 (1,221)	67 (81)	0.103 (0.126)	19.96 (24.4)
Assab-Gonder	1,521	170	115	1,263	144	1,692	113	0.0742	33.8
Routes to Addis Ababa									
Assab-Addis Ababa	882	170	115	674	118	1,077	72	0.081	21.5
Djibouti-Addis Ababa (Galafi)	910	210	48	683	7	948	63	0.069	18.96
Djibouti-Addis Ababa (Dewenle)	840	210	48	870	7	1,135	76	0.090	22.7
Djibouti-Addis Ababa (rail)	781	210	48	575	262	1,095	73	0.093	21.9
Berbera-Addis Ababa	1,001	23	N/A	1,988	15	2,032	135	0.135	40.6
Mombasa-Addis Ababa (Moyale)	1,992	195	263	3,750	141	4,349	290	0.145	87.0

Table 2. Summation of Transportation Costs (US$) (continued)

	Distance	Port Charges	CFA Charges	Inland Freight	Additional Costs	Total Costs	Cost / MT	Cost / MT / KM	Total Transport Cost (% of CIF)
Routes to Southern Sudan [4]									
Port Sudan-Wau	2,992	—	—	—	—	—	—	—	
Mombasa-Lokichokio-Thiet (road/air)	2,235	195	263	16,925	384	17,267	1,151	0.52	345
Mombasa-Lokichokio-Tambura (road/air)	2,295	195	263	13,515	333	14,306	954	0.42	286
Mombasa-Koboko-Thiet (road)	2,757	195	263	13,901	997	15,356	1,024	0.37	307
Mombasa-Koboko-Tambura (road)	2,684	195	263	13,995	1,002	15,455	1,030	0.38	309

1. The figures in parentheses on the routes from Masawa represent the total costs after an additional 35 percent surcharge applicable where backhaul cargo does not exist.
2. Includes 75 for extra costs.
3. No additional costs — extra costs at the port of Massawa.
4. Inland freight costs to Sudan include US$ 500 for official transit costs within Kenya for all routes through Kenya and additional US$ 1,000 for routes via Koboko. Road/air rates assume a C130 aircraft from Lokichokio.

- The current costs of transportation to Southern Sudan, as exhibited by all routes, do not provide any basis for all manner of commercial transport, which presents the urgent need for a security solution to the present conflicts in the area.

- For the two ports of Assab and Djibouti, which are the only ones in direct competition, a further analysis considering sea-freight indicates that Assab is more expensive than Djibouti by 62 percent for cargo originating from the Far East, 26 percent for cargo originating from Europe (North Continent), and 33 percent for cargo originating from the United States.

TRANSPORT LINKAGES AND FOOD SECURITY

Food security is defined as the assurance of adequate availability of acceptable food stuffs at affordable prices to all people at all times, usually achieved through agricultural production or trade on surplus produce. The subregion has experienced a decline in food production mainly as a result of droughts, poor government's policies, and civil strife, which means that both consumption and trade has been constrained. The latter is exacerbated by poor transport linkages between surplus and deficit areas, which represents potential high costs of transport. The attainment of food security has been further constrained by the low budgetary capability of most of the countries in the subregion, such that most of the sourced food has come in the form of food aid from overseas. Thus, the dominant impact of the alignment of the existing transport infrastructure towards external markets exhibiting poor internal linkages and the potential resultant high transportation costs is the phenomenon of near total dependency on food aid/imports in the region.

The ready availability of food aid which dominates the international grain transactions in the subregion is accordingly one of the most significant impediments to food security. Food aid has had the adverse tendency to paralyse local agricultural potential, signifying lack of incentives to increase local production and keeping local prices below costs of production. Other impacts include the encouragement of local food sufficiency (subsistence production) in areas of high agricultural potential at the expense of surplus production for trade and the diversion of resources to short-term emergency interventions, particularly storage and warehousing.

Notwithstanding the effects of drought, insecurity, government policies, etc., the improvement of transport linkages in the subregion would be expected to stimulate farmers, particularly in high potential areas to enhance agricultural production, as the potential to competitively market surplus agricultural produce in opened-up deficit areas will emerge, thereby encouraging inter-country/intra-regional trade. Availability of good transport linkages will also reduce the costs of transport in accessing farm inputs such as fertilizers and seeds. In *Southern Sudan*, for example, the impact of improvement of transport linkages has resulted in transport cost savings of between 30 and 62 percent for different destinations using different modes, which has cut down on the import bills of the NGOs operating in the area, and has the potential to be reinvested in transport infrastructure.

In summary, improving transport linkages would have a direct role in ensuring regional food security by reducing transport costs, providing incentives for farmers to exploit new markets, encouraging increased agricultural production, encouraging trade in surplus, eliminating dependency on food aid, and making each country in the subregion to exploit its comparative advantage.

SUMMARY OF CONSTRAINTS, WEAKNESSES, AND RECOMMENDATIONS

The major finding of this study is that transportation costs in this subregion are high, estimated at between 9.5 and 37 percent of CIF value of consignment for routes to Khartoum, 20 to

34 percent for routes to Gonder, 21 to 28 percent for routes to Addis Ababa, and between 286 and 345 percent for routes to Southern Sudan via the port of Mombasa. The factors which contribute to the high costs include inadequate investment in infrastructure, poor condition of existing infrastructure, bureaucratic governments' policies, cumbersome operating procedures and regulations, and insecurity being physical and nonphysical barriers. These weaknesses and constraints are summarized in this chapter, and, as part of the longer term objective to minimize costs, appropriate recommendations are put forward.

Massawa-Asmara Corridor

The principal constraints emanate from the poor state of the port infrastructure at Massawa, largely due to the civil war, manifested by the substantial damage to the container terminal. In addition, the ports' operational berths are not able to handle large ships, and because of inadequacy of navigational aids, berthing is restricted to daylight hours only, which causes congestion. Similarly, the ports' cargo-handling equipment are not only inadequate but also in poor condition, mainly as a result of shortage of requisite skilled manpower. Lastly, the port tariff is cumbersome and does not provide a basis for maximization of revenues.

The monopoly exercised by ERSTAS in the shipping and transit agency business at Massawa is a major issue of concern, as it does not provide a basis for competition and quality services levels as transit times remain high. Although the clearing and forwarding agency business has been liberalized, lack of skilled manpower is still evident.

Existing road infrastructure is old, and suffered destruction due to bombings and neglect during the war. The roads are characterized by steep gradient, poor alignment, and narrowness. Truck loading is limited to an average of 20 MT. The railway serving the corridor has been defunct since 1975, but the government of Eritrea has commenced a re-vitalization program.

The existing truck capacity in Eritrea is under-utilized, mainly due to limited commercial cargo as a result of Eritrea's limited and unbalanced international trade. As a result, the trucking industry has relied heavily on food aid distribution as its mainstay over the years. The corridor is served by very old trucks whose average age is 15 to 20 years, which comprise various models and makes which creates difficulties in procurement of spare parts.

Recommendations

- **Ports:** The Government of Eritrea and the World Bank have initiated a Ports Development Project for Massawa (and Assab), which entails the physical rehabilitation of the port, including reconstruction of the container berths and supply of cargo-handling equipment. While this project is expected to expand the capacity and productivity of the port, it would be prudent for the port authority to establish sound maintenance programs for equipment and infrastructure, preferably on a contractual basis with the private sector, to ensure that the benefits of rehabilitation are not soon lost.

  The port's tariff structure should be simplified / streamlined to allow maximization of revenue and should incorporate the use of freight or harbor metric tons in assessing charges.

  The government has also proposed to restructure the ports with full commercialization of the operations and management of Massawa and Assab. The restructuring should entail the involvement of all stakeholders in port activities, and the port's management should enter into a performance contract with the government to enhance operations through established targets. To further enhance the operations of the port, it is recommended that the port evolve a corridor concept whereby it coordinates the flow of goods and information and plays leading role with other players in the chain — namely, customs, CFAs, shipping agents, and road haulers — and puts emphasis on training, improving operating procedures, and providing good renumeration for employees.

- **Shipping, Clearing, and Forwarding:** It is recommended that the Government of Eritrea should fully liberalize the shipping agency business and the clearing and forwarding of transit cargo, to foster competition and improve efficiency. The government should also encourage professionalism in the industry. Donors should be approached to provide the necessary training and technical assistance to this budding industry.

- **Railway System:** The first consideration in the reactivation of the railway should be to reorient it with a regional approach giving consideration to the potential of the railway to link Eritrea, Ethiopia, and Sudan.

- **Roads:** The Government of Eritrea is currently undertaking a road rehabilitation program at a cost of about US$40 million annually, since the existing trunk roads traverse very difficult topography, characterized by extremely steep gradients. It is recommended that the rehabilitation should focus on realigning and widening of roads to accommodate modern HGVs. Concern has been raised, however, on whether the government's emergency rehabilitation of the existing roads should be the key issue, or rather the country should focus on long-term plans by rerouting some of its trunk roads to reorient them in such a manner that Massawa can effectively serve northern parts of Ethiopia, southwestern parts of Eritrea, and Eastern Sudan to capture wider markets. The government should also review regulations and policies governing axle loads and vehicle types and makes so that they can be consistent with the road standards and specifications in the country to alleviate potential damages on the road infrastructure. There is also the need to raise sufficient revenue from road users via taxation — fuel, ownership, etc. — to provide a basis for availability of funds for maintenance. Eritrea, with the neighboring countries of Sudan and Ethiopia, should jointly evaluate the feasibility of creation of a network of transport links, which is crucial in their respective efforts to not only cut costs but also enhance regional trade and food security.

  It is expected that the current initiative being undertaken by the government will not only reduce the current dependence of the trucking industry on relief transportation, but also reorient the fleet to serve regional markets. The exploitation of regional markets will serve as a great opportunity and potential for fostering much needed fleet replacement, and for which donor assistance may be required. To improve road transport, the Government of Eritrea should facilitate the restructuring of ERRA into a relief transport coordinating body. This should include the coordination of the distribution of relief cargo to beneficiaries, and the safeguarding of the transport resources necessary to meet the continued future demand for relief transport. Thus, ERRA should cease to be operative as a transporter and, instead, privatize its current fleet to individuals, institutions, or trucking associations. ERRA also has the potential to develop the private sector domestic trucking industry in Eritrea by acting as a guarantor of lease-purchase agreements between financiers or donors and transport operators.

Addis Ababa Corridor

Addis Ababa Corridor is served by the two ports of Assab and Djibouti. The main constraints are largely at the port of Assab. Vessels there can only berth during the daylight due to lack of adequate navigational aids which is a cause for considerable delay. The port is also operating at capacity and experiences congestion mainly during importation of large bunches of relief food aid and government cargo (fertilizers). At the port of Djibouti, the satisfactory condition of facilities is acknowledged, including modern cargo-handling equipment and a modern container terminal. However, the port still lacks mobile cranes, which implies that cargo operations are undertaken using ship derrick cranes for loading and discharging. As is the case at Massawa, ERSTAS's monopoly of shipping agents and clearing and forwarding businesses at Assab, working in association of MTSE, is a major constraint, as it fosters inefficiency and thus exacerbates costs, both in terms of money and time. This situation is made worse by the practice of transhipping Ethiopia's cargo through the port of Djibouti to and from Assab.

The Customs procedures along the Addis Ababa corridor from both Assab and Djibouti are to a large extent cumbersome. This is particularly the case for Ethiopian cargo, where the requirements to deposit a customs bond or cash with Ethiopian customs has been criticized. Similarly, there are weaknesses in the organization of the customs facilities and services at the two ports and along the corridor, which do not have appropriate infrastructure to serve the increasing volumes of traffic. Customs personnel are also inefficient due to lack of adequate training and motivation. Other constraints include the requirements for mandatory customs permission before goods can be transported and the physical verification undertaken by Ethiopian customs at Assab and Djibouti before goods can be transported, despite another verification in Addis Ababa which is time consuming and cumbersome leading to added costs of transportation.

The main constraints facing road transportation along the Djibouti-Addis Ababa corridor include the poor state of infrastructure, particularly the road sections between Dewenle-Dire Dawa (214 km) and Dire Dawa-Harer Junction (31 km), and, until recently, the numerous cumbersome administrative procedures and restrictions imposed by the governments of both Djibouti and Ethiopia on commercial road transport, which not only effectively restricted the transport capacity along the corridor but also raised transportation costs. However, the situation is expected to improve substantially if the bilateral transport agreements signed by the two governments in September 1996 which lifted these restrictions are fully implemented to make the corridor competitive.

Finally, the CDE, the only rail route along the corridor, has suffered from serious problems emanating from policy differences between the governments of Ethiopia and Djibouti. The CDE is also characterized with a poor state of physical infrastructure such as tracks and bridges, and inadequate and old rolling stock (locomotives and wagons) whose availability is low — hence, its restricted capacity. The CDE is understood to be losing skilled and experienced labor, particularly those with technical backgrounds. The competitive advantage of the CDE is further constrained by the fact that it does not take commercial responsibility for the goods it carries.

Recommendations

- **Ports:** Any recommendations to improve the efficiency of the Addis Ababa corridor from both Assab and Djibouti ports must be seen from the perspective that Ethiopia is the client for whom services are to be provided.

  The improvement of the port of Assab is included under the Eritrean Ports Development Project to be executed by the Government of Eritrea and the World Bank, as discussed for the port of Massawa. Specifically, at Assab, the project will inter alia involve the construction of two additional berths to exclusively handle containers, and the expansion of the container terminal capacity to between 80,000 and 100,000 TEUs annually. The project will also cover the procurement of cargo-handling equipment, including mobile container cranes. As a means to foster Ethiopian preference for Eritrean ports (Assab), Eritrea has placed high priority on regional integration with Ethiopia as its main client, especially with regards to trade and transport. A Joint High Ministerial Commission between the two countries exists, and a Protocol Agreement on Harmonization of Economic Policies is in effect.

  The Port of Djibouti Authority has also taken initiatives to increasingly serve the Addis Ababa corridor, and a joint committee established at government levels has signed bilateral transport and economic accords that among other issues provided significant incentives to Ethiopian shippers to use the port of Djibouti as their gateway. In this context, the port has simplified its tariff structure to maximize revenue and also reduced port dues for Ethiopian cargo by 50 percent. The port is also proposing to reorient its administration to promote efficiency through a new relationship with the government and a proper mandate and holding of democratic elections for the post of Chairman, all of which should make the port semi-autonomous. The port has also indicated a willingness to provide additional facilities, specifically mobile container cranes.

The recommendations already proposed to improve efficiency at the port of Massawa, including the review of the existing tariff structure, similarly apply in the case of the port of Assab. However, to improve efficiency and cost effectiveness of the port of Djibouti to serve the corridor:

— The port should initiate a comprehensive maintenance program to keep the port equipment in running condition. The maintenance program ideally should be contracted out to private sector operators.
— The joint commission established by the Governments of Djibouti and Ethiopia should ensure full support and implementation of the recent agreements between the two countries with regard to commercial transportation between them and use of the port by Ethiopian shippers.

- **Customs Procedures:** The current procedures along the Addis Ababa corridor are cumbersome, especially with regard to documentation and verification. In addition, the customs bond or cash deposit at 125 percent is considered excessive. We therefore recommend that:
  — Bonds should be made at 100 percent of the assessed duties and taxes.
  — The Government of Ethiopia should insist on preshipment inspection at foreign ports for cargo with CIF value of US$ 1,000 and above.
  — Vehicles intended to carry Ethiopian transit cargo must be securely enclosed, be capable of being sealed, and be sealed before they can be accepted for carriage of goods. Relevant vehicles may then be required to display a transit license number plate.
  — Vehicles judged to be insecure must not be licensed to carry transit goods. If they do carry such goods, either they must travel under police escort, or, alternatively, duty for such cargo must be collected in advance.
  — Customs officers at border posts should be well equipped with proper physical and communication facilities, and should remain open for 24 hours.
  — Customs officers should be adequately trained and remunerated.

- **Railway Services:** Initiatives have been taken by the governments of Ethiopia and Djibouti with the support of donors to rehabilitate the CDE. However, additional investments per se will not improve the capacity and operational efficiency of the CDE. This handicap is known, and donors proposing to provide funds for short-, medium-, and long-term interventions have made it a condition that a management study, originally undertaken by DanRail, must be finalized and its recommendations implemented as part of the overall initiative to improve the CDE. Notwithstanding, many stakeholders have voiced concern that, in order to minimize conflicts over the management and operations of the railway, a third party with relevant experience should be commissioned to run the CDE, although the overall direction should remain with the CDE Board of Directors. The third party should be appointed under a management contract linked to performance targets, which should gear the CDE towards full commercial orientation. The management contractor will need the goodwill of both Ethiopia and Djibouti to facilitate the efficient operations of the CDE, in effect providing an enabling environment for a semi-autonomous railway.

  In addition, both governments should ensure that the railway is marketed aggressively and that cargo is sourced only on commercial principles. The CDE tariff should also be reviewed and made more flexible, with provisions for concessionary rates for regular bulk customers. The CDE should take commercial responsibility for goods it carries to attract and retain customers, and, where the situation permits, the railway should contract out some of its noncore activities.

Berbera Corridor

Berbera Port's principal constraints and weaknesses emanate from the poor state of the port itself. These include the run-down conditions of the existing infrastructure and facilities (berths and warehouses), lack of modern cargo-handling equipment, and poor condition of the few pieces of equipment that are available. Lack of / poor availability of spare parts is another crucial issue. The port also suffers from poor communications facilities, and lack of adequate navigational and piloting aids, which leads to delays in vessel operations, especially berthing. In addition, the port's institutional framework and management are poor, with some employees in key positions lacking adequate formal and professional training. The lack of formally established clearing and forwarding services also constrains the efficiency at the port, particularly for transit cargo. In addition, customs services at the port are characterized by lack of infrastructural facilities, equipment, and adequately trained staff. The port tariff based on the type of packaging is another weakness, as it does not provide for the maximization of revenue. Inadequate availability of generators and rationing of power also affects the port operations.

The main paved road from Berbera to Hargeisa, which links the corridor to the hinterland, is generally in an acceptable condition, although the effect of lack of maintenance is already showing. The fact that the road authority lacks any resources to carry out repairs coupled with lack of private sector firms with adequate capacity for road rehabilitation and maintenance is another weakness. The corridor is served by fairly old trucks, characterized by low replacement, which is attributed to lack of credit facilities due to the civil war which has characterized the region over the last few years. Finally, the corridor lacks a transport service industry per se, because the existing trucks are largely owned by individuals and merchants, as a means of facilitating their own businesses. As a result, they suffer from lack of operational and navigational skills to effectively provide a proper transport sector.

Recommendations

- **The Port:** At the port, against a background of deteriorating and poor condition of infrastructure, the UNDP and United Nations Conference on Trade and Development (UNCTAD) have already initiated a high-priority, labor-intensive civil works program under the Port Rehabilitation Program Works. This new program is divided into four parts covering: the repair of the Russian Wharf (400 meters) and construction of a gate house, repairs to the workshop, refurbishment of the port administration building, and construction of a new port access road and refurbishment of berth No.4 and repairs to transit shade. The program also covers institution building, focusing on human resource development and management training, to improve efficiency.

  Notwithstanding the rehabilitation of physical infrastructure, there is an urgent need to give priority attention to cargo-handling equipment. The current practice of discharging cargo manually is a major weakness. Equipment such as slings, cranes, and forklifts, among others, should be procured to enhance cargo-handling. The port also needs a container terminal and container handling equipment in order to attract more cargo. The supply of electricity to the port is another area that needs urgent attention. In addition, the port authority should consider the improvement of navigational and piloting facilities at the port to enable enhanced berthing safety and navigational efficiency; the improvement of telecommunication facilities and flow of information from the port; comprehensive training of the port management staff — both formally and professionally to enable them to acquire not only the technical skills but also the commercial principles necessary for improving the ports efficiency; and finally, in order to maximize revenue, review of the port's tariff, which could then provide the much needed funds for financing some of the above requirements.

- **Clearing and Forwarding:** The port authority should as a priority encourage the establishment of a well functioning and coordinated clearing and forwarding industry. This will help to achieve efficiency at the port and also promote the port by marketing it to prospective customers.

- **Customs Services:** Customs should be provided with adequate infrastructure (offices) with proper operational facilities, including computers and telecommunication connections (phone/fax). Finally, staff training and proper provision of customs facilities en-route should be given attention.

- **Roads:** The European Union's (EU's) Somalia Unit is currently planning to undertake the funding of labor-intensive rehabilitation works and capacity building for the local authorities concerned with road maintenance. This effort is estimated to cost some US$ 3 million. Notwithstanding, an appropriate institutional set up to take responsibility for the roads is a target area. In order that the roads do not suffer premature deterioration, it is recommended that axle load controls be strictly enforced. Similarly, to provide a basis for sustenance, a cost recovery program should be initiated.

- **Road Transport:** To improve road transport services, particularly the difficulty of fleet replacement since loan facilities are not available, it is recommended that local truckers' associations be formed which could benefit from donations of trucks by donors and NGOs, as has been done in some countries in the subregion. Operational and management training should also be provided through seminars and workshops involving the sensitization of modern principles of management to streamline the industry, help in cost effective operations, and the competitiveness of the corridor.

Mombasa Port Corridor

The port of Mombasa is, by far, the most important gateway serving East and Central Africa. Due to the ongoing civil war in Southern Sudan, the port of Mombasa is also a major gateway for imports, particularly relief cargo destined for the region. To some extent, the port of Mombasa has the potential to serve the Southern provinces of Ethiopia via Moyale. The Government of Kenya, with support of the World Bank, has initiated major reforms at the port, including, among other things, the commercialization of its management and operations, and privatization of some of the activities, including the management of the container terminal and equipment maintenance.

It can, therefore, be argued that the main constraints and weaknesses along the Mombasa corridor are currently not directly linked to the port but emanates from road transport, particularly from the primary destinations to the inland destinations in Southern Sudan. The main constraints include the extremely poor condition of roads, insecurity, and consequently the high transport rates. Other problems include numerous transit demands (largely unofficial) along the routes, which often costs up to US$ 1,500, depending on the number of military check points. The Mombasa corridor is also characterized by poor enforcement of axle load limits, which has accelerated the destruction of roads through overloading.

Similarly, the potential for the Mombasa port to effectively serve Southern Ethiopia provinces is believed to be curtailed by: (a) poor road conditions, particularly the section between Isiolo and Moyale, which is under gravel, coupled with the steep gradient of the roads in Ethiopia that necessitate under-capacity loading of trucks, (b) insecurity along the route in Northern Kenya, and (c) tedious and time-consuming Ethiopian customs procedures that require commencing of the import process in Addis Ababa.

Recommendations

Any attempt at addressing the constraints and weaknesses currently characterizing the Mombasa corridor, and particularly road routes to and inside Southern Sudan, must take cognisance of the civil war in the country and general insecurity situation.

Therefore, the restoration of peace and security along the routes and the regions served by the corridor is the first step in solving some of the main road transport problems. The newly revitalized Inter-Governmental Authority on Development (IGAD), whose mandate includes conflict resolution, is expected to play a major role towards this end. IGAD could also focus on the development of infrastructure, particularly roads to augment the efforts that donors such as the U.S. Agency for International Development (USAID) have played in the past.

As an interim measure and in addition to the role that IGAD is likely to play in resolving the security problem, it is recommended that an association of all transporters serving Southern Sudan should be formed, out of a mutual consensus with the objective of collective bargaining in the determination of official applicable transit charges, enhanced security for transporters, improvement of road conditions, and regulation of truckers operations, including checking overloading.

With respect to the potential of the corridor providing transit security to Ethiopia, the major considerations should be on road infrastructure improvement. Already the design for the 136-km section from Isiolo to Merille River has been prepared. The feasibility study for whole road (510 km) has been undertaken, funded by EU at a cost of US$ 130,000. However, funding for its implementation has not been obtained, although it is acknowledged that IGAD has included this road section in its current program. Due to the regional significance of this route, a regional approach in soliciting donor support is recommended.

Summary of Recommendations

The following section summarizes this study's recommendations covering ports, clearing and forwarding issues, customs, services, and the various modes of transport in the subregion, by country.

Eritrea

- **Ports**
  - — Improve physical facilities
  - — Improve berthing facilities and aids
  - — Initiate preventive equipment maintenance programs
  - — Contract equipment maintenance
  - — Procure additional cargo-handling equipment
  - — Revise port tariff
  - — Initiate staff training program
  - — Fully commercialize ports operations
  - — Improve communication facilities

- **Clearing and Forwarding**
  - — Fully liberalize shipping agency business
  - — Liberalize transit cargo forwarding
  - — Initiate a training program

- **Railways**
  - — Establish viability of the railway
  - — Reorient railway to serve potential regional markets — Ethiopia & Sudan

- **Roads**
  - — Realign roads to accommodate HGVs
  - — Reorient roads to provide regional linkages
  - — Establish Road Maintenance Fund
  - — Enforce axle limit controls

- **Road Transport**
  - — Restructure ERRA to coordinate relief
  - — Seek wider regional markets
  - — Application of Common Market for Eastern and Southern Africa (COMESA) regulations and agreements

- **Customs**
  - — Reduce customs bond to 100 percent of assessed tax value

Ethiopia/Djibouti

- **Ports**
  - — Procure cargo-handling equipment — mobile cranes
  - — Promote the port through bilateral agreements
  - — Make port autonomous

- **Clearing and Forwarding**
  - — Promote local clearing and forwarding capacity at Djibouti
  - — Liberalize ERSTAS monopoly arrangements with MTSE

- **Railways**
  - — Make CDE semi-autonomous
  - — Appoint management contractor
  - — Set performance targets
  - — Revise tariffs
  - — Privatize noncore railway operations
  - — CDE should accept commercial responsibility for goods it carries

- **Roads**
  - — Improve road route via Dewenle
  - — Undertake Joint regional projects
  - — Establish technical committee to review regional projects

- **Road Transport**
  - — Support the full implementation of recent bilateral agreements on road transport from the port of Djibouti.
  - — Apply COMESA regulations and agreements on transit traffic

- **Customs**
  - — Reduce bond to 100 percent of assessed tax
  - — Ensure a 24-hour operation
  - — Improve working facilities
  - — Synchronize verifications

Northwestern Somalia (Somaliland)

- **Ports**
  - — Procure cargo-handling equipment
  - — Adequate supply of power
  - — Initiate a training program
  - — Improve berthing and navigational facilities
  - — Review the tariff
  - — Improve communication facilities
  - — Construct a container terminal

- **Clearing and Forwarding**
  - — Promote the establishment of CFAs

- **Roads**
  - — Initiate a road maintenance program
  - — Enforce axle load limits
  - — Establish road funding scheme

- **Road Transport**
  - — Management and operations training
  - — Form truckers associations

- **Customs**
  - — Initiate training Program
  - — Improve working conditions
  - — Provide adequate facilities

Southern Sudan

- **Security**
  - — Restoration of peace and security along the routes

- **Road Transport**
  - — Enforcement of axle load limits
  - — Formation of a Transporters' Consortium

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